MEMORANDUM

TO: Mr. Addison Rice
Anderson, Mulholland and Associates

DATE: July 8, 2015

FROM: R. Infante

FILE: 1412216AR1

checked by
7/14/15

RE: Data Validation
Air samples
SDG: 1412216AR1

SUMMARY

Full validation was performed on the data for several gas samples analyzed for selected volatile organic compounds by method Compendium Method TO-15: Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS), January, 1999. The samples were collected at the Bristol Myer Squib-Building 5 VI facility, Humacao, PR site on December 10-11, 2014 and submitted to Eurofins Air Toxics, Inc. of Folson, California that analyzed and reported the results under delivery groups (SDG) 1412216AR1.

The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: Compendium Method TO-15. Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS), January, 1999; Validating Air Samples. Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, (SOP # HW-31. Revision #4. October, 2006. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted. In general the data is valid as reported and may be used for decision making purposes.

The data results are acceptable for use. Detected results for ethanol in samples B5SS-5 (2014), B5SS-1 (2014), and B5SS-1D (2014) exceed the instrument calibration range and are considered estimated values. Result qualified as an estimated value (J) by the validator and qualified (E) by the laboratory. Results for ethanol, acetone, 2-propanol, methylene chloride, 4-methyl, 2-pentanone, toluene, and m,p-xylene in samples B5SS-1/B5SS-1D qualified as estimated (J) due to RPD exceeding laboratory control limits and method criteria. Undetected results for chloroethane and naphthalene rejected (R) in samples B5SS-2 (2014), B5SS-3 (2014), B5SS-5 (2014), B5SS-1 (2014), AND B5SS-1D (2014) due to % recovery in LCS < lower limit.

The laboratory issued the following statement:

"The work order was re-issued on July 1, 2015 for the following reasons:

1. To report additional compounds per client's request. While the initial report met the laboratory data quality requirements for the originally requested compounds, the additional compounds were not evaluated for quality compliance at the time of sample analysis. As a result, the re-issued report contains qualified data for several of the added compounds.

2. All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

3. To report estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives."

SAMPLES

The samples included in the review are listed below

Client Sample ID	Lab. Sample ID	Collected Date	Matrix	Analysis
B5SS-7 (2014)	1412216AR1-01A	12/10/2014	Air	VOCs
B5SS-4 (2014)	1412216AR1-02A	12/10/2014	Air	VOCs
B5SS-6 (2014)	1412216AR1-03A	12/10/2014	Air	VOCs
B5SS-2 (2014)	1412216AR1-04A	12/11/2014	Air	VOCs
B5SS-3 (2014)	1412216AR1-05A	12/11/2014	Air	VOCs
B5SS-5 (2014)	1412216AR1-06A	12/11/2014	Air	VOCs
B5SS-1 (2014)	1412216AR1-07A	12/11/2014	Air	VOCs
B5SS-1D (2014)	1412216AR1-08A	12/11/2014	Air	VOCs

REVIEW ELEMENTS

Sample data were reviewed for the following parameters, where applicable to the method

- Agreement of analysis conducted with chain of custody (COC) form
- Holding time and sample preservation
- Gas chromatography/mass spectrometry (GC/MS) tunes
- Initial and continuing calibrations
- Method blanks/trip blanks/field blank
- Canister cleaning certification criteria
- Surrogate spike recovery
- Internal standard performance and retention times
- Field duplicate results
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results
- Quantitation limits and sample results

DISCUSSION

Agreement of Analysis Conducted with COC Request

Sample reports corresponded to the analytical request designated on the chain-of-custody form.

Holding Times and Sample Preservation

Sample preservation was acceptable.

Samples analyzed within method recommended holding time.

GC/MS Tunes

The frequency and abundance of bromofluorobenzene (BFB) tunes were within the QC acceptance criteria. All samples were analyzed within the tuning criteria associated with the method.

Initial and Continuing Calibrations

VOCs (Method TO-15)
The percent relative standard deviations (%RSDs) and response factors (RFs) of all target analytes were within the QC acceptance criteria in the initial calibration. Correlation coefficients (r^2) of target analytes were within the QC acceptance criteria. Ongoing accuracy of the instrument was determined by the analysis of a continuing calibration standard.

Method Blank/Trip Blank/Field Blank

Target analytes were not detected in laboratory method blanks except for the followings:

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION/ UNIT
12/18/14	1412216AR1-09A	Air/low	Bromomethane	1.8 ppbv
			Ethanol	9.7 ppbv
12/22/14	1412216AR1-09B	Air/low	Bromomethane	0.81 ppbv
			Freon 12	0.12 ppbv
			MTBE	0.067 ppbv
			Chloroform	0.068 ppbv
			cis-1,2-dichloroethene	0.11 ppbv
			2,2,4-trimethylpentane	0.14 ppbv
			1,2-dichloroethane	0.13 ppbv
			Dibromochloromethane	0.099 ppbv
			Cumene	0.064 ppbv
			Propylbenzene	0.063 ppbv
			1,2-dichlorobenzene	0.098 ppbv
			1,2,4-trichlorobenzene	0.34 ppbv
			Hexachlorobutadiene	0.47 ppbv

No action taken, 5x concentration in blank < the sample reporting concentration

Summa canister met cleaning certification criteria.

No trip/field blank analyzed with this data package.

Surrogate Spike Recovery

The surrogate recoveries were within the laboratory QC acceptance limits in all samples analyzed.

Internal Standard Performance

VOCs and Methanol (TO-15)
Samples were spiked with the method specified internal standard. Internal standard are performance and retention times met the QC acceptance criteria in all sample analyses and calibration standards.

Laboratory/Field Duplicate Results

Laboratory duplicates (LCS/LCSD) were analyzed as part of this data set. Target analytes meet the RPD performance criteria of + 25 % for analytes 5 x SQL. Field duplicates were samples B5SS-1/B5SS-1D, RPD performance criteria of + 25 % for analytes 5 x SQL for all analytes except for the followings:

COMPOUND	RL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Ethanol	12000	7700000	4100000	61 %	Qualify results (J) in sample and duplicate.
Acetone	12000	1800000	900000	67 %	Qualify results (J) in sample and duplicate.
2-propanol	12000	2600000	1300000	67 %	Qualify results (J) in sample and duplicate.
Methylene chloride	2900	280000	180000	43 %	Qualify results (J) in sample and duplicate.
4-methyl-2-pentanone	2900	280000	110000	87 %	Qualify results (J) in sample and duplicate.
Toluene	2900	160000	57000	107 %	Qualify results (J) in sample and duplicate.
m,p-xylene	2900	170000	50000	109 %	Qualify results (J) in sample and duplicate.

LCS/LCSD Results

VOCs
LCS/LCSD (blank spike) associated with this data package were analyzed by the laboratory. Recoveries and RPD within laboratory control limits except for the following:

LCS ID	COMPOUND	% R	QC LIMIT
1412216AR1-11A/-11AA	Chloroethane	68 %	70 - 130
	alpha-chlorotoluene	159 %/169 %	70 - 130
	MTBE	68 %	70 - 130
	Naphthalene	58 %	70 - 130
	Hexachlorobutadiene	141 %	70 - 130
1412216AR1-11B/-11BB	1,2,4-trichlorobenzene	227 %/220 %	70 - 130
	alpha-chlorotoluene	159 %/169 %	70 - 130
	Hexachlorobutadiene	180 %/179 %	70 - 130

Positive results are qualified estimated (J) in affected samples; nondetects results are rejected (R) for anlytes with % R < lower limits.

Quantitation Limits and Sample Results

Dilution was performed on sample B5SS-3 (2014), B5SS-5 (2014), B5SS-1 (2014) and BS5SS-1D (2014) due to the presence of high level target species. All other samples diluted by a factor of less than 3.

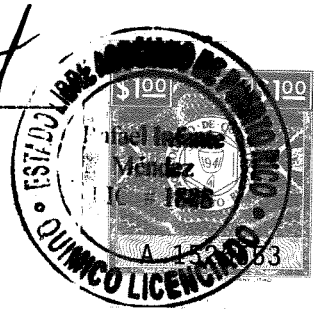
Detected results for ethanol in samples B5SS-5 (2014), B5SS-1 (2014), and B5SS-1D (2014) exceed the instrument calibration range and are considered estimated values.

Calculations were spot checked.

Certification

The following samples 1412216AR1-01A; 1412216AR1-02A; 1412216AR1-03A; 1412216AR1-04A; 1412216AR1-05A; 1412216AR1-06A; 1412216AR1-07A; and 1412216AR1-08A were analyzed following standard procedures accepted by regulatory agencies. The quality control requirements met the methods criteria except in the occasions described in this document. The results are valid. Some of the results were qualified.

Rafael Infante
Chemist License 1888



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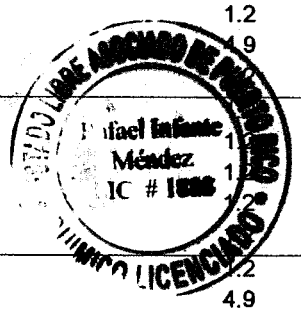
Client Sample ID: B5SS-7 (2014)

Lab ID#: 1412216AR1-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p122206r1**	**Date of Collection:**	**12/10/14 12:02:00 P**
Dil. Factor:	**2.43**	**Date of Analysis:**	**12/22/14 12:31 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.62 J	6.0	3.0 J
Freon 114	1.2	Not Detected	8.5	Not Detected
Chloromethane	12	Not Detected	25	Not Detected
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,3-Butadiene	1.2	Not Detected	2.7	Not Detected
Bromomethane	12	3.7 J	47	14 J
Chloroethane	4.9	Not Detected	13	Not Detected
Freon 11	1.2	8.7	6.8	49
Ethanol	4.9	28	9.2	53
Freon 113	1.2	Not Detected	9.3	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Acetone	12	47	29	110
2-Propanol	4.9	4.2 J	12	10 J
Carbon Disulfide	4.9	2.3 J	15	7.1 J
3-Chloropropene	4.9	Not Detected	15	Not Detected
Methylene Chloride	12	1.2 J	42	4.3 J
Methyl tert-butyl ether	1.2	1.1 J	4.4	3.8 J
trans-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Hexane	1.2	Not Detected	4.3	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.9	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.9	4.6 J	14	13 J
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Tetrahydrofuran	1.2	0.41 J	3.6	1.2 J
Chloroform	1.2	33	5.9	160
1,1,1-Trichloroethane	1.2	Not Detected	6.6	Not Detected
Cyclohexane	1.2	Not Detected	4.2	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.6	Not Detected
2,2,4-Trimethylpentane	1.2	Not Detected	5.7	Not Detected
Benzene	1.2	Not Detected	3.9	Not Detected
1,2-Dichloroethane	1.2	Not Detected	4.9	Not Detected
Heptane	1.2	Not Detected	5.0	Not Detected
Trichloroethene	1.2	Not Detected	6.5	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.6	Not Detected
1,4-Dioxane	4.9	Not Detected	18	Not Detected
Bromodichloromethane	0.52 J		8.1	3.5 J
cis-1,3-Dichloropropene	Not Detected		5.5	Not Detected
4-Methyl-2-pentanone	32		5.0	130
Toluene	3.8		4.6	14
trans-1,3-Dichloropropene	Not Detected		5.5	Not Detected
1,1,2-Trichloroethane	Not Detected		6.6	Not Detected
Tetrachloroethene	Not Detected		8.2	Not Detected
2-Hexanone	4.9	Not Detected	20	Not Detected



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Client Sample ID: B5SS-7 (2014)

Lab ID#: 1412216AR1-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p122206r1**	**Date of Collection:**	**12/10/14 12:02:00 P**
Dil. Factor:	**2.43**	**Date of Analysis:**	**12/22/14 12:31 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.2	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.3	Not Detected
Chlorobenzene	1.2	Not Detected	5.6	Not Detected
Ethyl Benzene	1.2	19	5.3	81
m,p-Xylene	1.2	75	5.3	320
o-Xylene	1.2	8.2	5.3	36
Styrene	1.2	Not Detected	5.2	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	Not Detected	6.0	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.3	Not Detected
Propylbenzene	1.2	Not Detected	6.0	Not Detected
4-Ethyltoluene	1.2	Not Detected	6.0	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	6.0	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	6.0	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.3	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
1,2,4-Trichlorobenzene	4.9	Not Detected	36	Not Detected
Hexachlorobutadiene	4.9	Not Detected	52	Not Detected
Naphthalene	2.4	Not Detected	13	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: B5SS-4 (2014)

Lab ID#: 1412216AR1-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p122207r1**	**Date of Collection: 12/10/14 2:12:00 PM**	
Dil. Factor:	**2.57**	**Date of Analysis: 12/22/14 01:25 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	0.59 J	6.4	2.9 J
Freon 114	1.3	Not Detected	9.0	Not Detected
Chloromethane	13	Not Detected	26	Not Detected
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
1,3-Butadiene	1.3	Not Detected	2.8	Not Detected
Bromomethane	13	3.4 J	50	13 J
Chloroethane	5.1	Not Detected	14	Not Detected
Freon 11	1.3	81	7.2	460
Ethanol	5.1	130	9.7	250
Freon 113	1.3	Not Detected	9.8	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Acetone	13	130	30	300
2-Propanol	5.1	51	13	120
Carbon Disulfide	5.1	1.0 J	16	3.2 J
3-Chloropropene	5.1	Not Detected	16	Not Detected
Methylene Chloride	13	26	45	92
Methyl tert-butyl ether	1.3	0.76 J	4.6	2.8 J
trans-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Hexane	1.3	0.30 J	4.5	1.0 J
1,1-Dichloroethane	1.3	Not Detected	5.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.1	2.7 J	15	8.0 J
cis-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Tetrahydrofuran	1.3	1.6	3.8	4.7
Chloroform	1.3	0.25 J	6.3	1.2 J
1,1,1-Trichloroethane	1.3	1.6	7.0	8.8
Cyclohexane	1.3	Not Detected	4.4	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.1	Not Detected
2,2,4-Trimethylpentane	1.3	Not Detected	6.0	Not Detected
Benzene	1.3	0.36 J	4.1	1.2 J
1,2-Dichloroethane	1.3	Not Detected	5.2	Not Detected
Heptane	1.3	1.1 J	5.3	4.6 J
Trichloroethene	1.3	Not Detected	6.9	Not Detected
1,2-Dichloropropane	1.3	Not Detected	5.9	Not Detected
1,4-Dioxane	5.1	Not Detected	18	Not Detected
Bromodichloromethane	1.3	Not Detected	8.6	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.8	Not Detected
4-Methyl-2-pentanone	5.1	24	5.3	100
Toluene	1.3	62	4.8	240
trans-1,3-Dichloropropene	1.3	Not Detected	5.8	Not Detected
1,1,2-Trichloroethane	1.3	Not Detected	7.0	Not Detected
Tetrachloroethene	1.3	Not Detected	8.7	Not Detected
2-Hexanone	5.1	Not Detected	21	Not Detected

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Client Sample ID: B5SS-4 (2014)

Lab ID#: 1412216AR1-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p122207r1**	**Date of Collection:**	**12/10/14 2:12:00 PM**
Dil. Factor:	**2.57**	**Date of Analysis:**	**12/22/14 01:25 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.9	Not Detected
Chlorobenzene	1.3	Not Detected	5.9	Not Detected
Ethyl Benzene	1.3	9.4	5.6	40
m,p-Xylene	1.3	36	5.6	160
o-Xylene	1.3	3.4	5.6	15
Styrene	1.3	0.35 J	5.5	1.5 J
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	0.19 J	6.3	0.96 J
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.8	Not Detected
Propylbenzene	1.3	Not Detected	6.3	Not Detected
4-Ethyltoluene	1.3	Not Detected	6.3	Not Detected
1,3,5-Trimethylbenzene	1.3	Not Detected	6.3	Not Detected
1,2,4-Trimethylbenzene	1.3	0.21 J	6.3	1.0 J
1,3-Dichlorobenzene	1.3	Not Detected	7.7	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.7	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.6	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.7	Not Detected
1,2,4-Trichlorobenzene	5.1	0.86 J	38	6.4 J
Hexachlorobutadiene	5.1	Not Detected	55	Not Detected
Naphthalene	2.6	0.16 J	13	0.82 J

J = Estimated value.

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: B5SS-6 (2014)

Lab ID#: 1412216AR1-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p122208r1**	**Date of Collection:**	**12/10/14 3:31:00 PM**
Dil. Factor:	**2.40**	**Date of Analysis:**	**12/22/14 01:51 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.59 J	5.9	2.9 J
Freon 114	1.2	Not Detected	8.4	Not Detected
Chloromethane	12	Not Detected	25	Not Detected
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,3-Butadiene	1.2	Not Detected	2.6	Not Detected
Bromomethane	12	2.7 J	47	10 J
Chloroethane	4.8	Not Detected	13	Not Detected
Freon 11	1.2	0.43 J	6.7	2.4 J
Ethanol	4.8	26	9.0	48
Freon 113	1.2	Not Detected	9.2	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Acetone	12	22	28	52
2-Propanol	4.8	6.8	12	17
Carbon Disulfide	4.8	3.8 J	15	12 J
3-Chloropropene	4.8	Not Detected	15	Not Detected
Methylene Chloride	12	2.4 J	42	8.5 J
Methyl tert-butyl ether	1.2	Not Detected	4.3	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Hexane	1.2	Not Detected	4.2	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.8	2.3 J	14	6.9 J
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.5	Not Detected
Chloroform	1.2	Not Detected	5.8	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.5	Not Detected
Cyclohexane	1.2	Not Detected	4.1	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.6	Not Detected
2,2,4-Trimethylpentane	1.2	Not Detected	5.6	Not Detected
Benzene	1.2	0.36 J	3.8	1.1 J
1,2-Dichloroethane	1.2	Not Detected	4.8	Not Detected
Heptane	1.2	Not Detected	4.9	Not Detected
Trichloroethene	1.2	Not Detected	6.4	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.5	Not Detected
1,4-Dioxane	4.8	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	8.0	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.4	Not Detected
4-Methyl-2-pentanone	1.2	4.0	4.9	16
Toluene	1.2	5.1	4.5	19
trans-1,3-Dichloropropene	1.2	Not Detected	5.4	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.5	Not Detected
Tetrachloroethene	1.2	Not Detected	8.1	Not Detected
2-Hexanone	4.8	Not Detected	20	Not Detected

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Client Sample ID: B5SS-6 (2014)

Lab ID#: 1412216AR1-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p122208r1**	**Date of Collection: 12/10/14 3:31:00 PM**	
Dil. Factor:	**2.40**	**Date of Analysis: 12/22/14 01:51 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.2	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.2	Not Detected
Chlorobenzene	1.2	Not Detected	5.5	Not Detected
Ethyl Benzene	1.2	0.90 J	5.2	3.9 J
m,p-Xylene	1.2	3.5	5.2	15
o-Xylene	1.2	0.33 J	5.2	1.4 J
Styrene	1.2	Not Detected	5.1	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	Not Detected	5.9	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.2	Not Detected
Propylbenzene	1.2	Not Detected	5.9	Not Detected
4-Ethyltoluene	1.2	Not Detected	5.9	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.9	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.9	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.2	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
1,2,4-Trichlorobenzene	4.8	Not Detected	36	Not Detected
Hexachlorobutadiene	4.8	Not Detected	51	Not Detected
Naphthalene	2.4	Not Detected	12	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: B5SS-2 (2014)

Lab ID#: 1412216AR1-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p122209r1**	**Date of Collection:**	**12/11/14 10:38:00 A**
Dil. Factor:	**2.16**	**Date of Analysis:**	**12/22/14 02:18 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.46 J	5.3	2.2 J
Freon 114	1.1	Not Detected	7.6	Not Detected
Chloromethane	11	Not Detected	22	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,3-Butadiene	1.1	0.54 J	2.4	1.2 J
Bromomethane	11	2.8 J	42	11 J
Chloroethane	4.3	Not Detected	11	Not Detected
Freon 11	1.1	0.23 J	6.1	1.3 J
Ethanol	4.3	47	8.1	89
Freon 113	1.1	Not Detected	8.3	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Acetone	11	89	26	210
2-Propanol	4.3	28	11	69
Carbon Disulfide	4.3	Not Detected	13	Not Detected
3-Chloropropene	4.3	Not Detected	14	Not Detected
Methylene Chloride	11	1.6 J	38	5.8 J
Methyl tert-butyl ether	1.1	0.44 J	3.9	1.6 J
trans-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Hexane	1.1	Not Detected	3.8	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.3	11	13	33
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.2	Not Detected
Chloroform	1.1	Not Detected	5.3	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	5.9	Not Detected
Cyclohexane	1.1	Not Detected	3.7	Not Detected
Carbon Tetrachloride	1.1	Not Detected	6.8	Not Detected
2,2,4-Trimethylpentane	1.1	Not Detected	5.0	Not Detected
Benzene	1.1	0.25 J	3.4	0.81 J
1,2-Dichloroethane	1.1	Not Detected	4.4	Not Detected
Heptane	1.1	Not Detected	4.4	Not Detected
Trichloroethene	1.1	Not Detected	5.8	Not Detected
1,2-Dichloropropane	1.1	Not Detected	5.0	Not Detected
1,4-Dioxane	4.3	Not Detected	16	Not Detected
Bromodichloromethane	[illegible]	Not Detected	7.2	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	4.9	Not Detected
4-Methyl-2-pentanone	1.1	5.2	4.4	21
Toluene	[illegible]	6.3	4.1	24
trans-1,3-Dichloropropene	[illegible]	Not Detected	4.9	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	5.9	Not Detected
Tetrachloroethene	1.1	Not Detected	7.3	Not Detected
2-Hexanone	[illegible]	Not Detected	18	Not Detected

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Client Sample ID: B5SS-2 (2014)

Lab ID#: 1412216AR1-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p122209r1**	**Date of Collection:**	**12/11/14 10:38:00 A**
Dil. Factor:	**2.16**	**Date of Analysis:**	**12/22/14 02:18 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.46 J	5.3	2.2 J
Freon 114	1.1	Not Detected	7.6	Not Detected
Chloromethane	11	Not Detected	22	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,3-Butadiene	1.1	0.54 J	2.4	1.2 J
Bromomethane	11	2.8 J	42	11 J
Chloroethane	4.3	Not Detected	11	Not Detected
Freon 11	1.1	0.23 J	6.1	1.3 J
Ethanol	4.3	47	8.1	89
Freon 113	1.1	Not Detected	8.3	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Acetone	11	89	26	210
2-Propanol	4.3	28	11	69
Carbon Disulfide	4.3	Not Detected	13	Not Detected
3-Chloropropene	4.3	Not Detected	14	Not Detected
Methylene Chloride	11	1.6 J	38	5.8 J
Methyl tert-butyl ether	1.1	0.44 J	3.9	1.6 J
trans-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Hexane	1.1	Not Detected	3.8	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.3	11	13	33
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.2	Not Detected
Chloroform	1.1	Not Detected	5.3	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	5.9	Not Detected
Cyclohexane	1.1	Not Detected	3.7	Not Detected
Carbon Tetrachloride	1.1	Not Detected	6.8	Not Detected
2,2,4-Trimethylpentane	1.1	Not Detected	5.0	Not Detected
Benzene	1.1	0.25 J	3.4	0.81 J
1,2-Dichloroethane	1.1	Not Detected	4.4	Not Detected
Heptane	1.1	Not Detected	4.4	Not Detected
Trichloroethene	1.1	Not Detected	5.8	Not Detected
1,2-Dichloropropane	1.1	Not Detected	5.0	Not Detected
1,4-Dioxane	4.3	Not Detected	16	Not Detected
Bromodichloromethane	1.1	Not Detected	7.2	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	4.9	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.4	21
Toluene	1.1	6.4	4.1	24
trans-1,3-Dichloropropene	1.1	Not Detected	4.9	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	5.9	Not Detected
Tetrachloroethene	1.1	Not Detected	7.3	Not Detected
2-Hexanone	4.3	Not Detected	18	Not Detected

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Client Sample ID: B5SS-2 (2014)

Lab ID#: 1412216AR1-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p122209r1**	**Date of Collection:**	**12/11/14 10:38:00 A**
Dil. Factor:	**2.16**	**Date of Analysis:**	**12/22/14 02:18 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.2	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.3	Not Detected
Chlorobenzene	1.1	Not Detected	5.0	Not Detected
Ethyl Benzene	1.1	10	4.7	44
m,p-Xylene	1.1	21	4.7	90
o-Xylene	1.1	0.96 J	4.7	4.2 J
Styrene	1.1	Not Detected	4.6	Not Detected
Bromoform	1.1	Not Detected	11	Not Detected
Cumene	1.1	Not Detected	5.3	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.4	Not Detected
Propylbenzene	1.1	Not Detected	5.3	Not Detected
4-Ethyltoluene	1.1	Not Detected	5.3	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.3	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.3	Not Detected
1,3-Dichlorobenzene	1.1	Not Detected	6.5	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.5	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.6	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.5	Not Detected
1,2,4-Trichlorobenzene	4.3	Not Detected	32	Not Detected
Hexachlorobutadiene	4.3	Not Detected	46	Not Detected
Naphthalene	2.2	Not Detected R	11	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: B5SS-3 (2014)

Lab ID#: 1412216AR1-05A

EPA METHOD TO-15 GC/MS

File Name:	**14121818r1**	**Date of Collection:**	**12/11/14 11:47:00 A**
Dil. Factor:	**59.0**	**Date of Analysis:**	**12/19/14 10:37 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	300	Not Detected	1400	Not Detected
Freon 114	300	Not Detected	2100	Not Detected
Chloromethane	1200	Not Detected	2400	Not Detected
Vinyl Chloride	300	Not Detected	750	Not Detected
1,3-Butadiene	300	Not Detected	650	Not Detected
Bromomethane	300	Not Detected	1100	Not Detected
Chloroethane	1200	Not Detected R	3100	Not Detected
Freon 11	300	Not Detected	1600	Not Detected
Ethanol	1200	210000	2200	400000
Freon 113	300	Not Detected	2300	Not Detected
1,1-Dichloroethene	300	Not Detected	1200	Not Detected
Acetone	1200	39000	2800	93000
2-Propanol	1200	120000	2900	300000
Carbon Disulfide	300	Not Detected	920	Not Detected
3-Chloropropene	1200	Not Detected	3700	Not Detected
Methylene Chloride	300	210 J	1000	720 J
Methyl tert-butyl ether	300	970 J	1100	3500
trans-1,2-Dichloroethene	300	Not Detected	1200	Not Detected
Hexane	300	Not Detected	1000	Not Detected
1,1-Dichloroethane	300	Not Detected	1200	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1200	Not Detected	3500	Not Detected
cis-1,2-Dichloroethene	300	Not Detected	1200	Not Detected
Tetrahydrofuran	300	Not Detected	870	Not Detected
Chloroform	300	Not Detected	1400	Not Detected
1,1,1-Trichloroethane	300	Not Detected	1600	Not Detected
Cyclohexane	300	Not Detected	1000	Not Detected
Carbon Tetrachloride	300	Not Detected	1800	Not Detected
2,2,4-Trimethylpentane	300	Not Detected	1400	Not Detected
Benzene	300	Not Detected	940	Not Detected
1,2-Dichloroethane	300	Not Detected	1200	Not Detected
Heptane	300	Not Detected	1200	Not Detected
Trichloroethene	300	500	1600	2700
1,2-Dichloropropane	300	Not Detected	1400	Not Detected
1,4-Dioxane	1200	Not Detected	4200	Not Detected
Bromodichloromethane	300	Not Detected	2000	Not Detected
cis-1,3-Dichloropropene	300	Not Detected	1300	Not Detected
4-Methyl-2-pentanone	300	1200	1200	5100
Toluene	300	420	1100	1600
trans-1,3-Dichloropropene	300	Not Detected	1300	Not Detected
1,1,2-Trichloroethane	300	Not Detected	1600	Not Detected
Tetrachloroethene	300	Not Detected	2000	Not Detected
2-Hexanone	1200	Not Detected	4800	Not Detected

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Client Sample ID: B5SS-3 (2014)
Lab ID#: 1412216AR1-05A
EPA METHOD TO-15 GC/MS

File Name:	**14121818r1**	**Date of Collection:**	**12/11/14 11:47:00 A**
Dil. Factor:	**59.0**	**Date of Analysis:**	**12/19/14 10:37 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	300	Not Detected	2500	Not Detected
1,2-Dibromoethane (EDB)	300	Not Detected	2300	Not Detected
Chlorobenzene	300	320	1400	1500
Ethyl Benzene	300	450	1300	2000
m,p-Xylene	300	2000	1300	8700
o-Xylene	300	210 J	1300	930 J
Styrene	300	Not Detected	1200	Not Detected
Bromoform	300	Not Detected	3000	Not Detected
Cumene	300	Not Detected	1400	Not Detected
1,1,2,2-Tetrachloroethane	300	Not Detected	2000	Not Detected
Propylbenzene	300	Not Detected	1400	Not Detected
4-Ethyltoluene	300	160 J	1400	780 J
1,3,5-Trimethylbenzene	300	71 J	1400	350 J
1,2,4-Trimethylbenzene	300	220 J	1400	1100 J
1,3-Dichlorobenzene	300	Not Detected	1800	Not Detected
1,4-Dichlorobenzene	300	Not Detected	1800	Not Detected
alpha-Chlorotoluene	300	Not Detected	1500	Not Detected
1,2-Dichlorobenzene	300	Not Detected	1800	Not Detected
1,2,4-Trichlorobenzene	1200	Not Detected	8800	Not Detected
Hexachlorobutadiene	1200	Not Detected	12000	Not Detected
Naphthalene	1200	Not Detected	6200	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	90	70-130

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Client Sample ID: B5SS-5 (2014)

Lab ID#: 1412216AR1-06A

EPA METHOD TO-15 GC/MS

File Name:	**14121824r1**	**Date of Collection:**	**12/11/14 1:59:00 PM**
Dil. Factor:	**854**	**Date of Analysis:**	**12/19/14 01:43 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	4300	Not Detected	21000	Not Detected
Freon 114	4300	Not Detected	30000	Not Detected
Chloromethane	17000	Not Detected	35000	Not Detected
Vinyl Chloride	4300	Not Detected	11000	Not Detected
1,3-Butadiene	4300	Not Detected	9400	Not Detected
Bromomethane	4300	Not Detected	16000	Not Detected
Chloroethane	17000	Not Detected R	45000	Not Detected
Freon 11	4300	Not Detected	24000	Not Detected
Ethanol	17000	4800000 E J	32000	9100000 E
Freon 113	4300	Not Detected	33000	Not Detected
1,1-Dichloroethene	4300	Not Detected	17000	Not Detected
Acetone	17000	2900000	40000	6800000
2-Propanol	17000	1800000	42000	4400000
Carbon Disulfide	4300	Not Detected	13000	Not Detected
3-Chloropropene	17000	Not Detected	53000	Not Detected
Methylene Chloride	4300	1500000	15000	5100000
Methyl tert-butyl ether	4300	24000 J	15000	85000
trans-1,2-Dichloroethene	4300	Not Detected	17000	Not Detected
Hexane	4300	Not Detected	15000	Not Detected
1,1-Dichloroethane	4300	Not Detected	17000	Not Detected
2-Butanone (Methyl Ethyl Ketone)	17000	Not Detected	50000	Not Detected
cis-1,2-Dichloroethene	4300	Not Detected	17000	Not Detected
Tetrahydrofuran	4300	34000	12000	99000
Chloroform	4300	Not Detected	21000	Not Detected
1,1,1-Trichloroethane	4300	Not Detected	23000	Not Detected
Cyclohexane	4300	Not Detected	15000	Not Detected
Carbon Tetrachloride	4300	Not Detected	27000	Not Detected
2,2,4-Trimethylpentane	4300	Not Detected	20000	Not Detected
Benzene	4300	Not Detected	14000	Not Detected
1,2-Dichloroethane	4300	Not Detected	17000	Not Detected
Heptane	4300	23000	17000	94000
Trichloroethene	4300	2000 J	23000	10000 J
1,2-Dichloropropane	4300	Not Detected	20000	Not Detected
1,4-Dioxane	4300	Not Detected	62000	Not Detected
Bromodichloromethane	4300	Not Detected	29000	Not Detected
cis-1,3-Dichloropropene	4300	Not Detected	19000	Not Detected
4-Methyl-2-pentanone	4300	1200000	17000	5100000
Toluene	4300	2200000	16000	8300000
trans-1,3-Dichloropropene	4300	Not Detected	19000	Not Detected
1,1,2-Trichloroethane	4300	Not Detected	23000	Not Detected
Tetrachloroethene	4300	1400 J	29000	9600 J
2-Hexanone	17000	Not Detected	70000	Not Detected

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Client Sample ID: B5SS-5 (2014)
Lab ID#: 1412216AR1-06A
EPA METHOD TO-15 GC/MS

File Name:	**14121824r1**	**Date of Collection:**	**12/11/14 1:59:00 PM**
Dil. Factor:	**854**	**Date of Analysis:**	**12/19/14 01:43 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	4300	Not Detected	36000	Not Detected
1,2-Dibromoethane (EDB)	4300	Not Detected	33000	Not Detected
Chlorobenzene	4300	4000 J	20000	18000 J
Ethyl Benzene	4300	400000	18000	1700000
m,p-Xylene	4300	1500000	18000	6500000
o-Xylene	4300	110000	18000	470000
Styrene	4300	Not Detected	18000	Not Detected
Bromoform	4300	Not Detected	44000	Not Detected
Cumene	4300	Not Detected	21000	Not Detected
1,1,2,2-Tetrachloroethane	4300	Not Detected	29000	Not Detected
Propylbenzene	4300	Not Detected	21000	Not Detected
4-Ethyltoluene	4300	1200 J	21000	6200 J
1,3,5-Trimethylbenzene	4300	Not Detected	21000	Not Detected
1,2,4-Trimethylbenzene	4300	1100 J	21000	5500 J
1,3-Dichlorobenzene	4300	Not Detected	26000	Not Detected
1,4-Dichlorobenzene	4300	Not Detected	26000	Not Detected
alpha-Chlorotoluene	4300	Not Detected	22000	Not Detected
1,2-Dichlorobenzene	4300	Not Detected	26000	Not Detected
1,2,4-Trichlorobenzene	17000	Not Detected	130000	Not Detected
Hexachlorobutadiene	17000	Not Detected	180000	Not Detected
Naphthalene	17000	Not Detected	90000	Not Detected

E = Exceeds instrument calibration range.
J = Estimated value.
Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	109	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: B5SS-1 (2014)

Lab ID#: 1412216AR1-07A

EPA METHOD TO-15 GC/MS

File Name:	**14121823r1**	**Date of Collection:**	**12/11/14 3:13:00 PM**
Dil. Factor:	**602**	**Date of Analysis:**	**12/19/14 01:20 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	3000	Not Detected	15000	Not Detected
Freon 114	3000	Not Detected	21000	Not Detected
Chloromethane	12000	Not Detected	25000	Not Detected
Vinyl Chloride	3000	Not Detected	7700	Not Detected
1,3-Butadiene	3000	Not Detected	6600	Not Detected
Bromomethane	3000	Not Detected	12000	Not Detected
Chloroethane	12000	Not Detected R	32000	Not Detected
Freon 11	3000	Not Detected	17000	Not Detected
Ethanol	12000	7700000 E J	23000	14000000 E
Freon 113	3000	Not Detected	23000	Not Detected
1,1-Dichloroethene	3000	Not Detected	12000	Not Detected
Acetone	12000	1800000 J	29000	4300000
2-Propanol	12000	2600000 J	30000	6500000
Carbon Disulfide	3000	Not Detected	9400	Not Detected
3-Chloropropene	12000	Not Detected	38000	Not Detected
Methylene Chloride	3000	280000 J	10000	960000
Methyl tert-butyl ether	3000	7000 J	11000	25000
trans-1,2-Dichloroethene	3000	Not Detected	12000	Not Detected
Hexane	3000	Not Detected	11000	Not Detected
1,1-Dichloroethane	3000	Not Detected	12000	Not Detected
2-Butanone (Methyl Ethyl Ketone)	12000	Not Detected	36000	Not Detected
cis-1,2-Dichloroethene	3000	Not Detected	12000	Not Detected
Tetrahydrofuran	3000	6800	8900	20000
Chloroform	3000	Not Detected	15000	Not Detected
1,1,1-Trichloroethane	3000	Not Detected	16000	Not Detected
Cyclohexane	3000	Not Detected	10000	Not Detected
Carbon Tetrachloride	3000	Not Detected	19000	Not Detected
2,2,4-Trimethylpentane	3000	Not Detected	14000	Not Detected
Benzene	3000	Not Detected	9600	Not Detected
1,2-Dichloroethane	3000	Not Detected	12000	Not Detected
Heptane	3000	3400	12000	14000
Trichloroethene	3000	4400	16000	24000
1,2-Dichloropropane	3000	Not Detected	14000	Not Detected
1,4-Dioxane	12000	Not Detected	43000	Not Detected
Bromodichloromethane	3000	Not Detected	20000	Not Detected
cis-1,3-Dichloropropene	3000	Not Detected	14000	Not Detected
4-Methyl-2-pentanone	3000	280000 J	12000	1200000
Toluene	3000	160000 J	11000	600000
trans-1,3-Dichloropropene	3000	Not Detected	14000	Not Detected
1,1,2-Trichloroethane	3000	Not Detected	16000	Not Detected
Tetrachloroethene	3000	1800 J	20000	12000 J
2-Hexanone	3000	Not Detected	49000	Not Detected

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Client Sample ID: B5SS-1 (2014)

Lab ID#: 1412216AR1-07A

EPA METHOD TO-15 GC/MS

File Name:	**14121823r1**	**Date of Collection:**	**12/11/14 3:13:00 PM**
Dil. Factor:	**602**	**Date of Analysis:**	**12/19/14 01:20 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	3000	Not Detected	26000	Not Detected
1,2-Dibromoethane (EDB)	3000	Not Detected	23000	Not Detected
Chlorobenzene	3000	4600	14000	21000
Ethyl Benzene	3000	30000	13000	130000
m,p-Xylene	3000	170000 J	13000	740000
o-Xylene	3000	28000	13000	120000
Styrene	3000	Not Detected	13000	Not Detected
Bromoform	3000	Not Detected	31000	Not Detected
Cumene	3000	Not Detected	15000	Not Detected
1,1,2,2-Tetrachloroethane	3000	Not Detected	21000	Not Detected
Propylbenzene	3000	Not Detected	15000	Not Detected
4-Ethyltoluene	3000	1000 J	15000	5200 J
1,3,5-Trimethylbenzene	3000	Not Detected	15000	Not Detected
1,2,4-Trimethylbenzene	3000	1400 J	15000	6800 J
1,3-Dichlorobenzene	3000	Not Detected	18000	Not Detected
1,4-Dichlorobenzene	3000	Not Detected	18000	Not Detected
alpha-Chlorotoluene	3000	Not Detected	16000	Not Detected
1,2-Dichlorobenzene	3000	Not Detected	18000	Not Detected
1,2,4-Trichlorobenzene	12000	Not Detected	89000	Not Detected
Hexachlorobutadiene	12000	Not Detected	130000	Not Detected
Naphthalene	12000	Not Detected	63000	Not Detected

E = Exceeds instrument calibration range.
J = Estimated value.
Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	108	70-130
4-Bromofluorobenzene	91	70-130

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Client Sample ID: B5SS-1D (2014)

Lab ID#: 1412216AR1-08A

EPA METHOD TO-15 GC/MS

File Name:	**14121826r1**	**Date of Collection:**	**12/11/14 3:19:00 PM**
Dil. Factor:	**583**	**Date of Analysis:**	**12/19/14 02:26 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2900	Not Detected	14000	Not Detected
Freon 114	2900	Not Detected	20000	Not Detected
Chloromethane	12000	Not Detected	24000	Not Detected
Vinyl Chloride	2900	Not Detected	7400	Not Detected
1,3-Butadiene	2900	Not Detected	6400	Not Detected
Bromomethane	2900	Not Detected	11000	Not Detected
Chloroethane	12000	Not Detected R	31000	Not Detected
Freon 11	2900	Not Detected	16000	Not Detected
Ethanol	12000	4100000 E J	22000	7700000 E
Freon 113	2900	Not Detected	22000	Not Detected
1,1-Dichloroethene	2900	Not Detected	12000	Not Detected
Acetone	12000	900000 J	28000	2100000
2-Propanol	12000	1300000 J	29000	3200000
Carbon Disulfide	2900	Not Detected	9100	Not Detected
3-Chloropropene	12000	Not Detected	36000	Not Detected
Methylene Chloride	2900	180000 J	10000	640000
Methyl tert-butyl ether	2900	4400 J	10000	16000
trans-1,2-Dichloroethene	2900	Not Detected	12000	Not Detected
Hexane	2900	Not Detected	10000	Not Detected
1,1-Dichloroethane	2900	Not Detected	12000	Not Detected
2-Butanone (Methyl Ethyl Ketone)	12000	Not Detected	34000	Not Detected
cis-1,2-Dichloroethene	2900	Not Detected	12000	Not Detected
Tetrahydrofuran	2900	2500 J	8600	7400 J
Chloroform	2900	Not Detected	14000	Not Detected
1,1,1-Trichloroethane	2900	Not Detected	16000	Not Detected
Cyclohexane	2900	Not Detected	10000	Not Detected
Carbon Tetrachloride	2900	Not Detected	18000	Not Detected
2,2,4-Trimethylpentane	2900	Not Detected	14000	Not Detected
Benzene	2900	Not Detected	9300	Not Detected
1,2-Dichloroethane	2900	Not Detected	12000	Not Detected
Heptane	2900	1300 J	12000	5400 J
Trichloroethene	2900	Not Detected	16000	Not Detected
1,2-Dichloropropane	2900	Not Detected	13000	Not Detected
1,4-Dioxane	12000	Not Detected	42000	Not Detected
Bromodichloromethane	2900	Not Detected	20000	Not Detected
cis-1,3-Dichloropropene	2900	Not Detected	13000	Not Detected
4-Methyl-2-pentanone	2900	110000 J	12000	460000
Toluene	2900	57000 J	11000	210000
trans-1,3-Dichloropropene	2900	Not Detected	13000	Not Detected
1,1,2-Trichloroethane	2900	Not Detected	16000	Not Detected
Tetrachloroethene	2900	Not Detected	20000	Not Detected
2-Hexanone	12000	Not Detected	48000	Not Detected

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Client Sample ID: B5SS-1D (2014)

Lab ID#: 1412216AR1-08A

EPA METHOD TO-15 GC/MS

File Name:	**14121826r1**	**Date of Collection:**	**12/11/14 3:19:00 PM**
Dil. Factor:	**583**	**Date of Analysis:**	**12/19/14 02:26 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	2900	Not Detected	25000	Not Detected
1,2-Dibromoethane (EDB)	2900	Not Detected	22000	Not Detected
Chlorobenzene	2900	Not Detected	13000	Not Detected
Ethyl Benzene	2900	9500	13000	41000
m,p-Xylene	2900	50000 J	13000	220000
o-Xylene	2900	8200	13000	36000
Styrene	2900	Not Detected	12000	Not Detected
Bromoform	2900	Not Detected	30000	Not Detected
Cumene	2900	Not Detected	14000	Not Detected
1,1,2,2-Tetrachloroethane	2900	Not Detected	20000	Not Detected
Propylbenzene	2900	Not Detected	14000	Not Detected
4-Ethyltoluene	2900	Not Detected	14000	Not Detected
1,3,5-Trimethylbenzene	2900	Not Detected	14000	Not Detected
1,2,4-Trimethylbenzene	2900	Not Detected	14000	Not Detected
1,3-Dichlorobenzene	2900	Not Detected	18000	Not Detected
1,4-Dichlorobenzene	2900	Not Detected	18000	Not Detected
alpha-Chlorotoluene	2900	Not Detected	15000	Not Detected
1,2-Dichlorobenzene	2900	Not Detected	18000	Not Detected
1,2,4-Trichlorobenzene	12000	Not Detected	86000	Not Detected
Hexachlorobutadiene	12000	Not Detected	120000	Not Detected
Naphthalene	12000	Not Detected	61000	Not Detected

E = Exceeds instrument calibration range.
J = Estimated value.
Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	94	70-130

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Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
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(916) 985-1000 FAX (916) 985-1020

Page ____ of ____

Project Manager Terry Taylor
Collected by: (Print and Sign) [signature]
Company AMAI Email
Address 110 Corporate Pk City White Plains State NY Zip 10604
Phone 914-251-0400 Fax

Project Info:
P.O. #
Project # Building 5 VI
Project Name BMS Humacao

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psig)
01A	BSSS-7(2014) ✓	1L1685	12/10/14	1202	see notes	30	6.5		
02A	BSSS-4(2014) ✓	1L1681	12/10/14	1412	"	30+	5		
03A	BSSS-6(2014) ✓	1L1707	12/10/14	1531	"	30+	5		
04A	BSSS-2(2014) ✓	1L1680	12/11/14	1038	"	30+	5		
05A	BSSS-3(2014) ✓	1L1706	12/11/14	1147	"	28	5		
06A	BSSS-5(2014) ✓	1L1702	12/11/14	1389	"	30	5		
07A	BSSS-1(2014) ✓	1L1556	12/11/14	1513	"	30	5		
08A	BSSS-1D(2014) ✓	1L2034	12/11/14	1519	"	30	5		
09A	UNUSED	1L1558							

dw 12/13/14

Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
12/11/14; 1531	[signature] FAEL 12/12/14 0925
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time

Notes: Acetone, Benzene, Ethylbenzene, Isopropyl Alcohol, Methanol, MIBK, Toluene, Xylene via TO-15. Methane via ASTM D-1946

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex	7721 9049 5206	NA	Good	Yes No (None)	1412216

Form 1293 rev.11

Project Number:_____1412216AR1_____
Date:_____12/10-11/2014_____

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: QC criteria from "Compendium Method TO-15. Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS), January, 1999"; USEPA Hazardous Waste Support Branch. Validating Air Samples. Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, (SOP # HW-31. Revision #4. October, 2006). The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) _Eurofins_-_Air_Toxics_____ data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: __1412216AR1_____ Sample matrix: ___Air_____
No. of Samples: _____8_____

Trip blank No.: ____-_____
Field blank No.: _____-_____
Equipment blank No.:___-_____
Field duplicate No.:_____B5SS-1/B5SS-1D_____

___X___ Data Completeness
___X___ Holding Times
___X___ GC/MS Tuning
___X___ Internal Standard Performance
___X___ Blanks
___X___ Surrogate Recoveries
___N/A_ Matrix Spike/Matrix Spike Duplicate
___X___ Laboratory Control Spikes
___X___ Field Duplicates
___X___ Calibrations
___X___ Compound Identifications
___X___ Compound Quantitation
___X___ Quantitation Limits

Overall Comments:_VOCs_by_method_TO-15_____
_____

Definition of Qualifiers:
J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer:_____
Date:__ 07/08/2015_____

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED

All criteria were met __X__
Criteria were not met
and/or see below _____

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION
All samples analyzed within the recommended method holding time				

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH $\leq$ 2, 4°C), no air bubbles.
Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C, no air bubbles.
Soil samples- 7 days from sample collection.
Cooler temperature (Criteria: 4 $\pm$ 2 °C): N/A – summa canisters

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).
If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ)
If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).
If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).
If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).
If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).
If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

All criteria were met __X___
Criteria were not met see below _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

__X___ The BFB performance results were reviewed and found to be within the specified criteria.

__X___ BFB tuning was performed for every 24 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected: _____

If mass calibration is in error, all associated data are rejected.

All criteria were met __X___
Criteria were not met
and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:_____12/17/14_____
Dates of continuing calibration:___12/18/14;_12/22/14__
Instrument ID numbers:_____MSD-P_____
Matrix/Level:_____Air/low_____

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and continuing calibration met the method performance criteria.				

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.
All %RSD must be ≤ 15 % regardless of method requirements for CCC.
All %Ds must be ≤ 30% regardless of method requirements for CCC.
Method TO-15 does not specify criterion for the curve correlation coefficient (r). A limit for r of ≥ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.
If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.
If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).
If any compound has a % D > 30%, estimate positive results (J) and reject nondetects (R).
If any compound has a % D > 30%, estimate positive results (J) and nondetects (UJ).
If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).
If any compound has r < 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met _____
Criteria were not met
and/or see below ___X___

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION/ UNITS
____All_method_blank_meeth_method_specific_criteria_except_for_the_followings:_____				
_12/18/14_____	_1412216AR1-09A_	_Air/low____	_Bromomethane_____	__1.8_ppbv_____
			_Ethanol_____	__9.7_ppbv_____
_12/22/14_____	_1412216AR1-09B_	_Air/low____	_Bromomethane_____	__0.81_ppbv____
			_Freon_12_____	__0.12_ppbv____
			_MTBE_____	__0.067_ppbv___
			_chloroform_____	__0.068_ppbv___
			_cis-1,2-dichloroethene____	__0.11_ppbv____
			_2,2,4-trimethylpentane____	__0.14_ppbv____
			_1,2-dichloroethane_____	__0.13_ppbv___
			_dibromochloromethane___	__0.099_ppbv___
			_cumene_____	__0.064_ppbv___
			_propylbenzene_____	__0.063_ppbv__
			_1,2-dichlorobenzene_____	__0.098_ppbv___
			_1,2,4-trichlorobenzene____	__0.34_ppbv____
			_hexachlorobutadiene_____	__0.47_ppbv____

Note: Affected samples are qualified (B) accordingly.

____Summa_canisters_met_cleaning_certification_criteria_____ _____

All criteria were met __X__
Criteria were not met
and/or see below _____

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS

No_field/trip/equipment_blanks_analyzed_with_this_data_package._____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)
ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and ≤ AL, report the compound as not detected (U) at the SQL.
If the concentration is ≥ SQL but ≤ AL, report the compound as not detected (U) at the reported concentration.
If the concentration is ≥ SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately
Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met __X__
Criteria were not met
and/or see below _____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.
List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.
Matrix: solid/aqueous

SAMPLE ID	SURROGATE COMPOUND			ACTION
	1,2-DICHLOROETHANE-d4	Toluene-d8	4-BFB	

_Surrogate_recoveries_within_laboratory_control_limits_____
_____
_____
_____
_____
_____

QC Limits* (Air)

_____LL_to_UL___70__to_130__ _70__to_130_ _70__to_130__

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met _____
Criteria were not met
and/or see below __N/A____

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.
Sample ID:_____ Matrix/Level:_____

MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
_____MS/MSD_are_not_required_as_part_of_Method_TO-15;_blank_spike_used_to_assess_____ accuracy_____					

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).
If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).
If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met _____
Criteria were not met
and/or see below __N/A___

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Method TO-15 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:_____ Matrix/Level/Unit:_____

COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION

Actions:

* If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).
* If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met _____
Criteria were not met
and/or see below ___X___

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.
List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT
LCS/LCSD % recoveries and RPD within laboratory control limits except for the followings:			
1412216AR1-11A/-11AA	Chloroethane	68 %	70 - 130
	alpha-chlorotoluene	159 %/169 %	70 - 130
	MTBE	68 %	70 - 130
	Naphthalene	58 %	70 - 130
	Hexachlorobutadiene	141 %	70 - 130
1412216AR1-11B/-11BB	1,2,4-trichlorobenzene	227 %/220 %	70 - 130
	alpha-chlorotoluene	159 %/169 %	70 - 130
	Hexachlorobutadiene	180 %/179 %	70 - 130

Note: Sample results qualified accordingly in affected sample.

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).
If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? **Yes** or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met _____
Criteria were not met
and/or see below _____

IX. LABORATORY DUPLICATE PRECISION

Sample IDs: __LCS/LCSD_____ Matrix:___Air____

Laboratory duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.
Suggested criteria: RPD ± 25% for air samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
3-chloropropene	0.2759	84	117	33	No action taken; concentration less that 5x reporting limit
Bromomethane	0.31398	84	116	32	
Chloroethane	0.63703	68	95	33	
RPD within method performance criteria for all other analytes.					

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met _____
Criteria were not met
and/or see below ___X___

IX. FIELD DUPLICATE PRECISION

Sample IDs: __B5SS-1/B5SS-1D_____ Matrix:___Air_____

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.
Suggested criteria: RPD ± 25% for air samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	RL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Ethanol	12000	7700000	4100000	61 %	Qualify results (J) in sample and duplicate.
Acetone	12000	1800000	900000	67 %	Qualify results (J) in sample and duplicate.
2-propanol	12000	2600000	1300000	67 %	Qualify results (J) in sample and duplicate.
Methylene chloride	2900	280000	180000	43 %	Qualify results (J) in sample and duplicate.
MTBE	2900	7000	4400	57 %	No action, concentration in one or both samples < 5 x RL
Tetrahydrofuran	2900	6800	2500	92 %	No action, concentration in one or both samples < 5 x RL
Heptane	2900	3400	1300	89 %	No action, concentration in one or both samples < 5 x RL
Trichloroethene	2900	4400	ND	NR	No action, concentration in one or both samples < 5 x RL
4-methyl-2-pentanone	2900	280000	110000	87 %	Qualify results (J) in sample and duplicate.
Toluene	2900	160000	57000	107 %	Qualify results (J) in sample and duplicate.
Tetrachloroethe	2900	1800	ND	NR	No action, concentration in one or both samples < 5 x RL

COMPOUND	RL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Chlorobenzene	2900	4600	ND	NR	No action, concentration in one or both samples < 5 x RL
Ethyl benzene	2900	30000	9500	104 %	No action, concentration in one or both samples < 5 x RL
m,p-xylene	2900	170000	50000	109 %	Qualify results (J) in sample and duplicate.
o-xylene	2900	28000	8200	109 %	No action, concentration in one or both samples < 5 x RL
4-Ethyltoluene	2900	1000	ND	NR	No action, concentration in one or both samples < 5 x RL
1,2,4-trimethylbenzene	2900	1400	ND	NR	No action, concentration in one or both samples < 5 x RL

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met __X__
Criteria were not met
and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

* Area of +40% or -40% of the IS area in the associated calibration standard.
* Retention time (RT) within ± 0.06 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION

_Internal_standard_area_and_retention_times_within_laboratory_control_limits_for_both_samples _and_calibration_standards_____

Actions:

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -40%		IS AREA > + 40%
Positive results	J		J
Nondetected results	R		ACCEPT

2. If a IS retention time varies more than 0.330 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were met __X__
Criteria were not met
and/or see below _____

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

1412216AR1-01A

Chloroform RF = 4.19754

[ ] = (268743)(25.0)/(118461)(4.19754)

= 13.51 ppbv OK

All criteria were met __X__
Criteria were not met
and/or see below _____

XII. QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASONS FOR DILUTION
Dilution was performed on samples by a factor of less than 3 except the following:		
1412216AR1-05A	59.0	High levels of target species.
1412216AR1-06A	854	High levels of target species.
1412216AR1-07A	602	High levels of target species.
1412216AR1-08A	583	High levels of target species.

B. Percent Solids

List samples which have $\leq$ 50 % solids

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)